M/027/006

STEFFEN ROBERTSON AND KIRSTEN
Consulting Engineers and Scientists

January 15, 1996

Utah Department of Natural Resources
Division of Oil, Gas and Mining
1594 West North Temple
Suite 1210
Salt Lake City, UT 84115-5801

Attn: Mr. D. Wayne Hedberg

Subject: Cricket Mountain Project (SRK#57705) - Response to UDOGM Comments on Notice of Intent to Revise Existing Large Mining Operation (M/027/006)

Dear Mr. Hedberg,

We have reviewed the comments made by your staff on Continental Lime, Inc.'s (CLI) notice of intent to revise their limestone quarry operations at Cricket Mountain and submit the following information for your review.

General

During several meetings (4/25/95 and 4/8/96) and in telephone conversations with your staff, it was agreed that the interests of UDOGM, the BLM and CLI would be best served if the permit revision process for both UDOGM and the BLM could be done concurrently using a single set of documents to describe the proposed modifications, reclamation commitments and the potential impacts of the proposed modifications on the environment. To that end, Steffen Robertson and Kirsten, Inc. (SRK) was contracted to prepare a combined document to satisfy NEPA requirements (Modification to the Plan of Operations) and UDOGM requirements (Notice of Intent to Revise Existing Large Mining Operations. This document (*Cricket Mountain Project, Modification to Plan of Operations/Notice of Intent to Revise Mining Operations*) was submitted to your office on April 8, 1996.

As also discussed, CLI was required to prepare an evaluation of the potential environmental impacts from the project under NEPA regulations. This document, the Draft Environmental Assessment (EA), was prepared in such a way as to satisfy the requirements of R647-4-109. A copy of the Draft EA is enclosed herein.

In response to many of the Division's comments on the application, the appropriate section of the EA is referenced. Where appropriate, additional information is included or attached.

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Response to Division Comments

R647-4-104 - Filing Requirements and Review Procedures

CLI concurs that the requested changes to the permit constitute a revision rather than an amendment. The document submitted was titled as such.

R647-4-105 - Maps Drawings & Photographs

105.2 Surface facilities map

The area of disturbance around BB Dolomite Quarry has been amended to include additional disturbance related to the crusher. Please see Table 2.1 of the *Environmental Assessment*.

105.3 Drawings or Cross Sections (slopes, roads, pad, etc.)

The areas to remain unreclaimed or steeper than 3H:1V are indicated on Drawing 5-1. A revised version of this drawing is enclosed.

Signs restricting access to the site would be placed around the site; and access to the highwall areas would be restricted by physical barriers such as but not limited to rock berms. Rock berms would be constructed of available quarry reject material(s). The berms will be of sufficient size and quantity to reasonably restrict vehicular travel into the site during operations and post-closure.

The attached figures depicts the cross-sectional configurations of the waste rock dumps, pit highwall and pit highwall safety berms. The use of boulders as an alternative method barricading the highwall was discussed, and agreed upon, in our November 20th meeting. If boulders were used they would be of a size which would preclude removal (typically $\geq$ 4ft) and a spacing which would restrict vehicle access (typically $\leq$ 4ft).

R647-4-106 - Operation Plan

106.2 Type of operations conducted, mining method, processing etc.

The quarry walls will be developed parallel to the dip of the limestone beds with an overall slope of approximately 20°. The individual benches will be approximately 20 feet high and 50 to 60 feet wide. The initial inter-bench slope faces will be near vertical with slopes flattening over time through the natural development of talus fill to approximately 45 to 70° (see attached Figure B). This configuration will not produce high, long, steep slopes for the highwalls, but rather a more gentle stair-step configuration. This configuration, along with the proposed highwall barricade structures, will substantially limit the possible safety risks.

The physical dimensions of the pit highwall are also described in Section 3.3 of the NOI. Please refer to the attached figures.

106.5 Existing soil types, location, amount

Please refer to subsection 3.1.2.2 of the *Environmental Assessment*. CLI has committed to conduct additional development and monitoring of revegetation test plots, as well as monitoring

of revegetation efforts at the Poison Mountain Quarry. Results of the test plots will be included in the *Annual Report* submitted to UDOGM.

Section 5.7.1 indicates the estimated volume of in-place soil is approximately 39,796 cubic yards for the BB Dolomite area. The lower volume (36,619 cubic yards) noted in Section 3.7 accounts for an estimated 8 percent loss. CLI proposes that 36,619 cubic yards is a more conservative estimate, and is more indicative of the available soil volume.

106.6 Plan for protecting & redepositing soils

Please refer to subsections 2.4.6, 2.5.1, and 4.1.2 of the *Environmental Assessment*.

106.7 Existing vegetation—species and amount

Please refer to subsections 2.6.7.1, 3.1.6.1, and 3.1.6.2 of the *Environmental Assessment*.

106.8 Depth to groundwater, extent of overburden, geology

Water rights in the area are owned by CLI. Please refer to subsections 2.4.8.3 and 3.1.5 of the *Environmental Assessment*.

R647-4-107 - Operation Practices

107.1.14 Posting warning signs

Please refer to Drawing 5-1, and subsection 2.5.5 of the *Environmental Assessment*.

107.1.15 Constructing berms, fences, etc. above highwalls

Please refer to the comments under R647-4-105.3 of this document.

107.2 Drainages to minimize damage

Given the gently sloping topography of the Project area, the only significant drainage area to be impacted is Waste Rock Disposal Area #1; please refer to subsection 4.1.5 of the *Environmental Assessment*.

107.3 Erosion control & sediment control

Please refer to subsection 3.1.5 of the *Environmental Assessment*.

107.5 Suitable soils removed & stored

All soil that can be safely salvaged by earthmoving equipment will be removed and stored in the soil stockpile areas.

107.6 Concurrent reclamation

Please refer to subsection 2.6.10 of the *Environmental Assessment*.

The current test plots are currently under review. CLI proposes to re-initiate the test plot program, and submit results of the program in the *Annual Report*.

R647-4-109 - Impact Assessment

109.1 Impacts to surface & groundwater systems

Please refer to subsection 3.1.5 of the *Environmental Assessment*, and to the comments under R647-4-107.2 of this document.

109.4 Slope stability, erosion control, air quality, safety

Please refer to comments under R647-4-105.3 and 106.2 of this document.

R647-4-110 - Reclamation Plan

110.1 Concurrent & post mining land use

Please refer to the request for a variance included in comments under R647-4-112. Although the proposed revegetation plan will not revegetate all of the disturbed areas, CLI does not believe this is inconsistent with the proposed post-mining land uses. Much of the existing surface in the vicinity of the quarries is bedrock or talus and does not support much vegetation. The proposed revegetation program should create vegetative communities which are more productive than many of the existing areas.

110.2 Roads, highwalls, slopes, drainages, pits, etc., reclaimed

The slopes between benches will be left at angle of repose. The horizontal and vertical components of these slopes are combined with the horizontal width of the catch benches to define the *overall* slope. Due to the presence of the catch benches, the *overall* slope will be less than that of the slopes between the benches. Please refer to the attached figures and Appendix B of the *Modification to Plan of Operations and Notice of Intention to Revise Mining Operations* for a typical cross sections through a waste rock disposal area.

The compacted areas and roads will be ripped to a depth of 18 inches during final reclamation. Please refer to subsection 2.6.7.4 of the *Environmental Assessment*.

Please refer to Drawings 3-1 and 5-1. CLI proposes to regrade the north slope of the Poison Mountain undersize material stockpile to 3H:1V. The south and east sides of this stockpile will be at grade. The west side of the stockpile would be left at angle of repose to avoid covering the existing road located along that side of the dump.

The 1993 plan did not allow for disposal of the additional material which will be generated from the West Quarry area. The expanded stockpile will extend further north and regrading the final slopes would block the drainage to the north. Therefore, CLI proposes to

1. regrade the top and benches of the stockpile to promote drainage,
2. regrade to 3H:1V the portions of the slopes which would not block the drainage,
3. replace salvaged growth medium on the tops, benches and regraded slopes, and
4. revegetate the tops, benches and regraded slopes.

110.3 Description of facilities to be left (post mining use)

All facilities will be reclaimed as described in the NOI. The descriptions include several activities for which variances are requested under R647-4-112 below.

110.5 Revegetation planting program

Please refer to the request for a variance include in comments under R647-4-112.

Please refer to subsection 2.6.7.2 of the *Environmental Assessment* which amends the seed mix as suggested.

As part of the calculation of reclamation costs for bonding, CLI has assumed a specific seed mix, and seeding, mulch and amendment rates. These parameters are defined in the forthcoming reclamation cost estimate. Harrowing as referred to in the NOI utilizes a chain harrow to bury the seed to the proper depth. This typically does not over-smooth the surface but leaves a rough surface. Please refer to subsection 2.6.7.4 of the *Environmental Assessment*.

R647-4-111 - Reclamation Practices

111.1.12 Disposal of trash & debris

Please refer to subsection 3.1.9 of the *Environmental Assessment*.

111.2 Reclamation of natural channels

Please refer to subsection 3.1.5 of the *Environmental Assessment*, and to the comments under R647-4-107.2 of this document.

111.5 Land capable of post mining land use

Please refer to comments under sections R647-4-110.1 and 110.5 of this document.

111.12 Topsoil redistribution

Please refer to comments under section R647-4-110.5 of this document.

R647-4-112 - Variance

The NOI describes activities which will require variances from several rules, specifically R647-4-111.12, R647-4-111.13. Descriptions of the activities which constitute a variance, the areas to be affected, justification for the variances and alternative measures to be implemented (where applicable) are detailed in the NOI with additional discussion below. Variances for these activities are requested in accordance with R647-4-112 and summarized below.

All drillholes will be plugged in accordance to R647-4-108. Therefore, no variances to that rule will be required.

Topsoil Redistribution (R647-4-111.12)

As noted in Sections 3.7, 4.1 and 5.7 of the NOI and Sections 2.4.6, 2.5.1 and 2.6.6 of the Draft EA, the presence of abundant bedrock outcrop and cliffs, and locally shallow or absent soils will result in a deficit of salvaged growth media for reclamation. To optimize the use of the available material during reclamation and maximize the post-mining land use, CLI has proposed to place

the salvaged material on areas where they will be least susceptible to erosion, provide the maximum contribution to revegetation efforts and maximize the mitigation of visual impacts. To this end, the following areas will be covered with salvaged growth media:

1. roads (except those within the quarries);
2. the tops and flat benches of the waste rock disposal areas;
3. the top and regraded slopes of the BB Dolomite screened undersize material pile;
4. the top, benches and regraded slopes of the expanded Poison Mountain screened undersized material pile;
5. the crusher and screening facility areas; and
6. the areas used for the growth media stockpiles.

If insufficient growth media is available to cover all these areas, the least visible roads in the West Quarry Area may not be completed covered. The following areas will not receive growth media:

1. roads within the quarries
2. the quarry benches, floors and walls
3. the slopes between benches of the waste rock disposal areas
4. the unregraded west slope of the BB Dolomite screened undersize material pile (see comments under R647-4-110.2 above);
5. the unregraded northern slope between benches of the expanded Poison Mountain screened undersized material pile (see comments under R647-4-110.2 above);

All of the stockpiles and waste rock disposal areas have been designed to be stable in their final configuration under both static and seismic conditions (see Appendix B, NOI). However, placement of soil on the slopes with mechanical equipment will not be possible. If, however, additional growth media is available, end dumping growth media from the tops of slopes could be used to place some soil on the slopes. These areas would then be hydroseeded. This method, has been used successfully to revegetate portions of steep slopes on other projects and could provide mitigation of the visual effects of the straight-line appearance of the benches. The remaining benches would collect any soil eroded from the steep slopes.

Revegetation (R647-4-111.13)

CLI proposes to revegetate only those areas which will receive growth media. The bedrock surfaces of the quarries and in-quarry roads, the coarse rock angle of repose slopes of the waste rock disposal areas and the angle of repose portions of the screened undersize material piles will not provide an adequate base for revegetation. Therefore, CLI does not propose to revegetate these areas.

Much of the existing area is unvegetated or poorly vegetated because of the abundance of bedrock outcrop and scarcity of soil. Because of the consistent depth of cover to be placed on the areas to be revegetated, once revegetation success has been achieved the revegetated areas should

be more productive as forage acreage than much of the existing area, providing partial mitigation of the impacts of unvegetated areas.

Although the current test revegetation program at the existing Poison Mountain Quarry included testing of fine limestone as a growth media, these tests have been largely unsuccessful. CLI plans to continue these experiments, but results to date do not indicate that the revegetation standards of R647-4-111.13 can be achieved with this method. Therefore, this alternative is not proposed for the expansion plans. CLI would be pleased to test other reasonable methods proposed by the Division during the ongoing test revegetation program and should a reasonable alternative be identified, revise the proposed revegetation program accordingly.

R647-4-113 - Surety

A spreadsheet which details the reclamation cost estimate of the reclamation activities described in the NOI, EA, this letter and agreed upon during the November 20th meeting is forthcoming. This spreadsheet was originally patterned after the BLM HeapRec spreadsheet, but is considerably more detailed. Should you require any assistance in reviewing this information, please let us know. If appropriate, we can arrange to meet with your staff in person to present these costs.

If you have any questions, please do not hesitate to call me at (702) 786-3225.

Sincerely,

STEFFEN ROBERTSON AND KIRSTEN

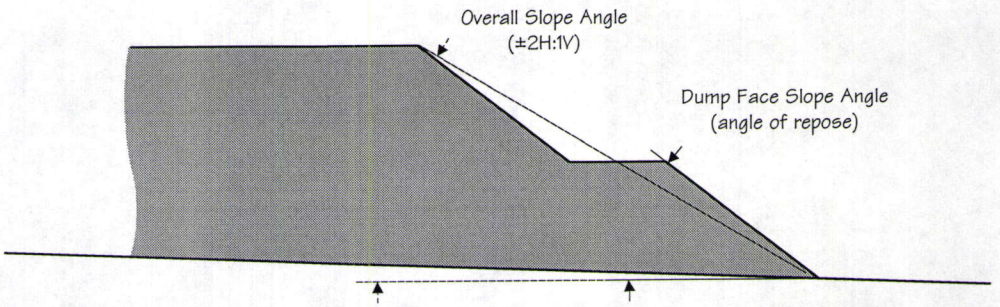
Jeffrey V. Parshley, P.G.

Division Head, Mining and Permitting

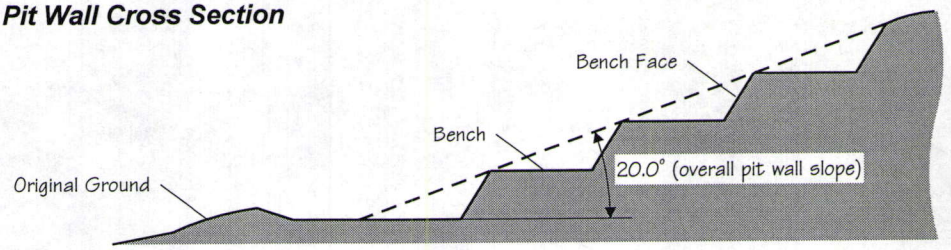
enclosures

cc: Mike Brown
Joe Brokkes

Dump Cross Section



Pit Wall Cross Section



Safety Berm Construction Volume

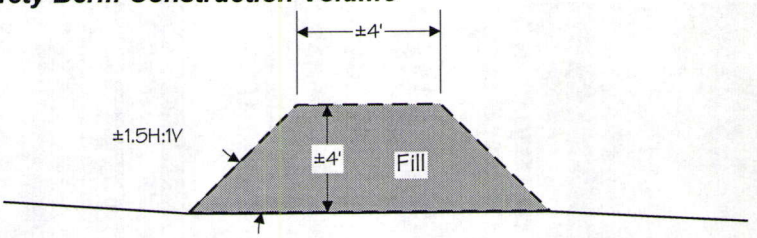
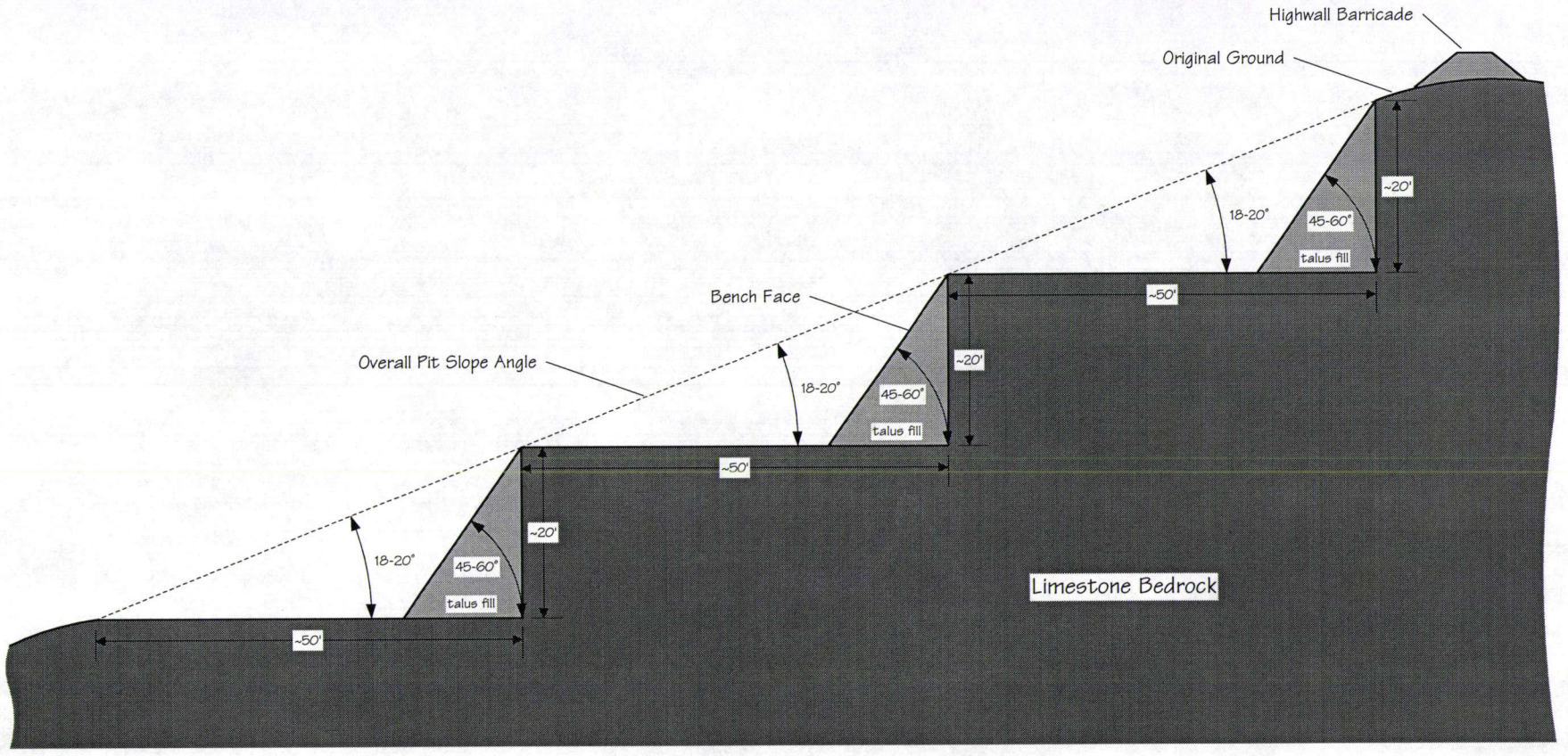


Figure A

SRK Steffen Robertson and Kirsten Consulting Engineers and Scientists

Continental Lime, Inc
Cricket Mountain Project
Typical Facility Cross-Sections

1/6/97



Not to Scale

Figure B

Continental Lime, Inc
Cricket Mountain Project
Typical Quarry Cross-Section

1/15/97